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Roll No. :

C028532(028)

**B. Tech. (Fifth Semester) Examination,
Nov.-Dec. 2021**

AICTE (New Scheme)

(Electronics & Telecommunication Engg. Branch)

NANO ELECTRONICS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Part (a) of each question is compulsory. Attempt any two parts from part (b), (c) and (d) from each question. All question carry equal marks. Marking pattern is 4, 8, 8 i.e. part (a) is of 4 marks and the rest two of 8 marks each.

Unit-I

1. (a) What is the size of nanotechnology?
(b) Give the detailed classification of different areas of

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Nanotechnology.

- (c) Explain how chemical vapour deposition carbon nanotubes are produced?
- (d) Explain the Fourier Transform Infra-red Spectroscopy.

Unit-II

- 2. (a) What do you mean by Semiconductor nanostructures?
- (b) Give the details of Two-dimensional semiconductor nanostructures.
- (c) Explain Quantum wells, wires and dots and compare each.
- (d) Describe the spintronics.

Unit-III

- 3. (a) Which quantum structure is used in single-electron transistor?
- (b) Write a short notes on Heterojunctions and Superlattices?

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- (c) Explain advanced MOSFET concepts.
- (d) Explain the working of SET (Single Electron Transistor).

Unit-IV

- 4. (a) Mention the types of nanotubes.
- (b) Explain the covalent functionalization of CNTs.
- (c) Describe the applications of nanotube for memory.
- (d) Explain the formation of nanotubes.

Unit-V

- 5. (a) Write the full forms of MEMS, NEMS, RAM.
- (b) Explain the concept of Quantum dot lasers.
- (c) Write short notes on Surround Gate FET and MODFETs.
- (d) Explain the working OLEDs.